

I Claim:

1. A fuel injection apparatus for a gas turbine engine comprising a prefilmer, the prefilmer comprises a body, the body defines an axis, an annular surface and a downstream edge, the prefilmer arranged so that when working in operative association with the fuel injection apparatus fuel impinges on the surface and flows, by means of a passing airflow, to the downstream edge, from where the fuel is shed, characterised in that the fuel injector further comprises a means for circumferentially varying the residence time of the fuel across the surface.

2. A fuel injection apparatus as claimed in claim 1 characterised in that the fuel injector comprises a fuel outlet passage that is arranged to spray fuel onto the surface, the means for circumferentially varying the residence time of the fuel across the surface comprises the fuel outlet passage having a circumferentially varied axial position so that fuel is sprayed on to the surface in at least two different axial positions.

3. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence time of the fuel on the surface comprises the surface having a circumferentially varied axial length so that fuel shed from the downstream edge is shed from at least two different axial positions.

4. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence time of the fuel on the surface is crenellated.

5. A fuel injection apparatus as claimed in claim 4 characterised in that the crenellations are of different axial positions so that there are at least three different axial positions.

6. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence time of the fuel on the surface is of a generally sinusoidal form.

7. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence time of the fuel on the surface is of a generally saw-toothed form.

5 8. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence time of the fuel on the surface is scarfed.

9. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence
10 time of the fuel on the surface defines arcuate portions.

10. A fuel injection apparatus as claimed in any one of claims 1-3 characterised in that the means for varying the residence time of the fuel on the surface defines a spiral.

11. A fuel injection apparatus as claimed in claim 1
15 characterised in that the means for varying the residence time of the fuel on the surface comprises the surface having at least one roughness patch.

12. A fuel injection apparatus as claimed in claim 1 characterised in that the means for varying the residence
20 time of the fuel on the surface is asymmetrically arranged about the fuel injection apparatus.

13. A fuel injection apparatus as claimed in claim 1 characterised in that the means for circumferentially varying the residence time of the fuel across the surface
25 comprises the fuel outlet passage arranged generally in one axial plane and configured to spray the fuel at more than one angle therefrom so that fuel impinges on the surface in at least two different axial positions and the residence time of the fuel across the surface varies
30 circumferentially.

14. A fuel injection apparatus as claimed in claim 13 characterised in that the fuel outlet passage comprises at least two angled portions, the angle of each being between 45 and 135 degrees.